APP/EPR/659

APPEAL BY THAMES WATER UTILITIES LTD
ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016
READING SLUDGE TREATMENT WORKS, ISLAND ROAD, READING RG2 0RP
ENVIRONMENT AGENCY STATEMENT OF CASE
DATE: 14/03/2024

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Section 1: Introduction

1. This is the Environment Agency's ("the Agency") statement of case in response to an appeal by Thames Water Utilities Limited, company number: 02366661, ("the Appellant"). The appeal is made under the provisions of regulation 31 of the Environmental Permitting (England and Wales) Regulations 2016 ("EPR 2016").

2. The Appellant is appealing the permit condition 2.4.1 which states that *"The operator shall complete the improvements specified in schedule 1 table S3.1 by the date specified in that table unless otherwise agreed in writing by the Environment Agency"* imposed in the permit variation EPR/MP3338LU/V004[1] ("the Permit") on 25 July 2023. In particular, the appeal relates to two of the fourteen improvement conditions ("IC") that are subject to this condition and specified in Schedule 1, table S3.1 of the Permit and the technical requirements, Agency interpretation and implementation timescales. This includes IC9 relating to the provision of final detailed designs and implementation of secondary containment design, and IC13 relating to a review of the effectiveness of operational

[1] EPR/MP3338LU/V004 ("The permit") and decision document

abatement plant identified as the odour control units. While the Appellant states that it is appealing condition 2.4.1, we consider that no challenge has actually been made to that condition and that the appeal is specifically against conditions IC9 and IC13 and the Agency's reasons for imposing them.

3. The activities permitted under the Permit include an Installation activity for the treatment of up to 915,000 tonnes per annum of sewage sludge using a biological treatment process called Anaerobic Digestion ("AD"), and a waste activity for the acceptance of wastes for discharging into the head of the works (sometimes described as "*head of works"*).

4. The operations undertaken on the Appellant's Reading Sludge Treatment Centre, Reading Sewage Treatment Works, Island Road, Reading, Berkshire RG2 0RP ("The Site") are existing operations that are being brought into regulation following a decision by UK regulators that the biological treatment of waste sewage sludge is not an activity covered by the Urban Waste Water Treatment Directive ("UWWTD")[2] and is therefore within the scope of the Industrial Emissions Directive ("IED"[3]). The IED came into force on 6 January 2011 with the requirement to implement all relevant Best Available Techniques (BAT) Conclusions as described in the Commission Implementing Decision. The Site is regulated under the EPR 2016 which transposed the obligations of the IED into UK law. The BAT Conclusions for Waste Treatment ("the BREF")[4] was published on 17 August 2018 following a European Union wide review of BAT, implementing decision (EU) 2018/1147 of 10 August 2018. BAT applies to waste sewage sludge treatment not covered by the UWWTD. The operations at the Site were already being undertaken and the Permit brought them into environmental regulation for the first time, meaning that they are now required to operate using BAT.

5. It should be noted that for new plant and infrastructure, we require applicants to design infrastructure and plant to meet BAT requirements, taking into account relevant guidance, before we will issue a permit. Therefore, new plant and infrastructure should be compliant with BAT from the date of permit issue. Since the Site is an existing site being brought into regulation under the IED for the first time, the Agency recognised that a pragmatic approach was needed to bring this unpermitted installation activity into environmental regulation. To issue permits without agreeing that an activity fully meets BAT would in essence amount to a permitted local enforcement position ("LEP"). LEPs are used by the Agency for activities operating outside the requirements of a permit and are meant to be temporary arrangements to enable some flexibility or leeway for operators to bring themselves into compliance. They are not intended to be used to authorise permanent or long term non-compliance with an environmental permit. To address this in this case, the Agency set prescriptive bespoke conditions in the Permit for the outstanding secondary containment BAT issue to be addressed. This bespoke condition included a definitive requirement plus a deadline for those techniques to be implemented – a backstop to ensure full legal compliance within an acceptable timescale. To support this the Agency also set improvement conditions for the timely submissions of detailed plans and designs following the submission of the high-level solutions proposed by the Appellant.

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[2] Directive 91/271/EEC concerning urban waste water treatment
[3] Directive 2010/75/EU - Industrial Emissions Directive
[4] Best Available Techniques (BAT) Reference Document for Waste Treatment

6. The Appellant was notified on the 2 April 2019 that all of their sewage sludge AD facilities, including the Site, were required to comply with the requirements of the IED, and the implementation date for all operators to be compliant with the Waste Treatment BAT conclusions was 17 August 2022. As such the Appellant has already had nearly 5 years to develop and implement solutions which met BAT prior to this appeal against improvement conditions IC9 and IC13.

Section 2: Relevant law and guidance

7. As an 'installation' (defined in EPR 2016), the Site is subject to the requirements of EPR 2016.

8. The installation activity on the Site ("the Installation") falls within the definition of a waste installation under Section 5.4 Part A(1)(b)(i), Part 2, Schedule 1 to the EPR 2016 - Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving biological treatment.

9. The provisions in Schedule 7 Part A Para 5(e) of the EPR 2016 regarding the regulation of installations include an obligation on the regulator to:
"exercise its relevant functions so as to ensure compliance with the following provisions of the Industrial Emissions Directive –
Article 5(1); Article 7; Article 8(2); Article 11; Article 13(7); Articles 14 to 18; Article 20(1) and (2); Article 22"

10. Article 5(1) requires that the Agency:
"shall grant a permit if the installation complies with the requirements of the Directive."

11. Article 11(a) requires that:
"all the appropriate preventative measures are taken against pollution"
Article 11(b) requires that:
"the best available techniques are used"
and Article 11(c) requires that:
"no significant pollution is caused"
Best available techniques are known as BAT.

12. Article 14(1) requires that:
"the permit includes all measures necessary for compliance with the requirements of Articles 11 and 18."
Article 14(3) requires that:
"BAT conclusions shall be the reference for setting the permit conditions."
Article 14(6) requires that:
"*Where an activity or a type of production process carried out within an installation is not covered by any of the BAT conclusions or where those conclusions do not address all the*

potential environmental effects of the activity or process, the competent authority shall, after prior consultations with the operator, set the permit conditions on the basis of the best available techniques that it has determined for the activities or processes concerned, by giving special consideration to the criteria listed in Annex III."
Annex III gives the "*Criteria for determining best available techniques*." Annex III (10) requires;
"the need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it."

13. Article 18 requires that:
"*Where an environmental quality standard requires stricter conditions than those achievable by the use of the best available techniques, additional measures shall be included in the permit, without prejudice to other measures which may be taken to comply with environmental quality standards.*"

14. Article 20(1) requires that the Agency:
"*shall take the necessary measures to ensure that the operator informs the [Agency] of any planned change in the nature or functioning, or an extension of the installation which may have consequences for the environment. Where appropriate, the [Agency] shall update the permit."*

15. BAT is defined in Schedule 7 Part A Paragraph 6 of the EPR 2016. Its meaning is that given in Article 3(10) of the IED, which is:
"'*best available techniques' means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole:*
(a) 'techniques' includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;
(b) *'available techniques' means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;*
(c) *'best' means most effective in achieving a high general level of protection of the environment as a whole;*"

16. Prior to 21 September 2022, guidance on BAT for treatment and transfer of non-hazardous wastes in England was given in Sector Guidance Note S5.06: recovery and disposal of hazardous and non-hazardous waste[5]. Since 21 September 2022, the guidance for such sites (that is BAT for installations and appropriate measures for waste operations) is given in technical guidance 'Biological waste treatment: appropriate measures for permitted

[5] Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste

facilities' [6]. The appropriate measures provide further guidance that we would accept to demonstrate that an operator meets BAT, however, the guidance is not prescriptive and an operator may propose alternative measures that will meet the same level of environmental protection. If an operator proposes alternatives, they must clearly evidence how they will provide the same level of environmental protection.

Secondary Containment Guidance

17. Guidance on containment systems for the prevention of pollution, secondary, tertiary and other measures for industrial and commercial premises, dated 2014[7] ("CIRIA C736") is the established industry standard of choice for containment and is based on the source-pathway-receptor approach to risk assessment. It provides a clear methodology for demonstrating BAT, the implementation of appropriate measures and compliance with permit conditions.

18. CIRIA C736 is relevant and applicable to identifying and managing the risk of storing substances which may be hazardous to the environment and applies to everything from small commercial premises to large chemical facilities. It primarily considers the potential consequences of storage tank failure and provides a risk assessment methodology to support a classification system for containment, providing different levels of performance requirement for different risks. The aim is to break the pathway between source and receptor.

19. CIRIA C736 provides containment options and examples of good practice, but, as referred to above, it is not prescriptive and there may be circumstances where it could be appropriate to use other methods where at least an equivalent level of environmental protection is provided.

20. Where CIRIA C736 measures are not considered to be relevant or appropriate for a specific facility, an explanation and justification should be provided using a risk-based approach. For existing facilities where measures cannot easily be implemented, we expect alternative measures to be proposed which achieve at least an equivalent standard to provide the same level of environmental protection. It should be recognised however that CIRIA C736 includes specific guidance for operators who need to implement secondary containment provisions at existing facilities. Newly built facilities and assets should be designed and built to CIRIA C736 report recommendations or to at least an equivalent approved standard. Newly built facilities and assets not designed and built to CIRIA C736 report recommendations, or to at least an equivalent standard, are unlikely to provide suitable primary and secondary containment, and as such would not comply with BAT and would be highly unlikely to be permitted. Existing facilities may face difficulties in becoming compliant with CIRIA C736 due to the viability of retrofitting to meet the recommendations. However, the same

[6] Biological waste treatment: appropriate measures for permitted facilities
[7] Containment systems for the prevention of pollution (C736)

containment assessments are still required, and improvements should be proposed to demonstrate that at least equivalent appropriate measures of environmental protection will be provided.

21. It is important at this point to outline that the provision of effective secondary containment is not a new or novel requirement introduced solely by the Waste Treatment BAT conclusions. Secondary containment is widely required across a number of permitted industries and is an established technique to prevent and reduce the impact from leakages, spillages and failure of primary storage of potentially polluting liquids. Industry best practice and BAT has long been established and is reflected in the following:

    - *Reference document on Best Available Techniques on Emissions from Storage* (2006) efs_bref_0706_0.pdf (europa.eu)[8]. BAT conclusions for industries which store polluting liquids.
    - *Storing and handling drums and intermediate bulk containers, PPG26* (2011)[9]. Guidelines reflecting good practice and relevant legislation for storing drums and intermediate bulk containers. Now withdrawn guidance which has been replaced with guidance located on www.gov.uk.
    - *Control and monitor emissions for your environmental permit* (first published 2016)[10]. Generic guidance for how operators must control and monitor emissions from activities that cause pollution.

22. Good practice has been established across industries for appropriate secondary containment volumes using the 110 % and 25 % rule. This widely adopted rule is set out in the Agency's generic guidance, 'Control and monitor emissions for your environmental permit' and requires that bunds must also have a capacity larger than both of the following:
    - 110% of the largest tank the bund is protecting.
    - 25% of the combined volume of all the tanks the bund is protecting.

    The source of this industry practice was established by the Control of Pollution (Oil Storage) (England) Regulations 2001. It was then further developed by various Health and Safety Executive guidance notes (HSG 51, HSG 71 and HSG 176). This legislation and guidance relate to the storage of flammable liquids and chemical storage. While the liquids stored and treated using AD are non-hazardous, this does not mean that their impact on the receiving environment would not cause pollution. This volume rule is widely accepted across the AD industry as an appropriate minimum requirement for designing secondary containment for AD facilities.

[8] Integrated Pollution Prevention and Control, Reference Document on Best Available Techniques on – Emissions from Storage, dated July 2006.
[9] Storing and handling drums and intermediate bulk containers, PPG26 (2011)
[10] Control and monitor emissions for your environmental permit.

Section 3: Decision under appeal

23. The Appellant is appealing the permit condition 2.4.1 which states that *"The operator shall complete the improvements specified in schedule 1 table S3.1 by the date specified in that table unless otherwise agreed in writing by the Environment Agency"* as imposed in the Permit. In particular the appeal relates to the technical requirements identified within the Improvement Conditions, the Agency interpretation of guidance, and implementation timescales, specifically IC9 and IC13. As stated in paragraph 2, above, while the Appellant states that it is appealing condition 2.4.1, we consider that no challenge has actually been made to that condition and that the appeal is specifically against conditions IC9 and IC13 and the Agency's reasons for imposing them.

24. The Appellant has advised that they believe that they cannot comply with the IC9 timescales as they believe that:
    - the Agency still needs to agree the risk assessment approach for secondary containment.
    - without an agreed risk assessment approach, the Appellant cannot determine the containment requirements and failure scenarios.
    - without the above being agreed the final design cannot be confirmed and approved by the Agency.

25. The Appellant has stated that they believe that bullet points two to six of IC9 are subject to the prior agreement of an updated BAT assessment (bullet point one of IC9).

26. The Appellant considers that the risk assessment approach has not been agreed due to:
    - Continuing discussions at national and local Agency level on the general risk assessment approach to secondary containment still being ongoing with an expected conclusion on the 25 January 2024.
    - The use of CIRIA C736 to risk assess the failure of tanks is not referenced within the Waste Treatment BAT conclusions.
        - The Appellant has stated that the CIRIA C736 was produced following the Buncefield Oil storage facility incident in 2005, and that the material held within the sludge holding tanks applied for as part of the Permit are not flammable like oil.
        - The Appellant has queried the application by the Agency of the 110% and 25% rule to determine containment volume within CIRIA C736 stating that discussions on the use of a risk-based approach and the use of 'credible failure scenarios' have yet to be concluded, which they expect to be on the 25 January 2024.

27. The Appellant has stated that they submitted an alternative approach to the BAT assessment with specific regard to BAT 19 of the waste treatment BREF at a meeting on the 3 January 2024 following the granting of the Permit, together with a formal request for a time extension on IC9 compliance.

28. The Appellant has advised that they believe that there have been changes in the approach/guidance by the Agency throughout the determination on the use and interpretation of CIRIA C736 which has delayed any potential response.

29. The Appellant has referenced the presentation provided by the Appellant to Sarah Raymond on 8 August 2023 following the determination of the Permit and in response to an application for another of the Appellant's sites, 'Maple Lodge Sludge Treatment Centre'.

30. The Appellant sought an extension to IC13 on 3 January 2024 at a meeting with the Agency which was followed up in writing on 17 January 2024 by the Appellant. On the 23 January 2024 the Agency wrote to the Appellant to advise that IC9 deadline would not be extended and confirmed that a Compliance Assessment Report (CAR) would be issued shortly confirming this.

31. The CAR form sent on 8 February 2024 included the Agencies decision to reject the extension request and subsequent reasons why. The CAR form outlined that the odour control units (OCUs) should have critical spares on site to account for any delays with acquiring parts, and that the query on process monitoring for pH should not impact or delay the submission of IC13 as it only formed a very small part of process monitoring.

Section 4: Justification for the decision (IC deadline)

32. The IED entered into force on 6 January 2011 and was transposed into UK law on 27 February 2013 by amendments to the Environmental Permitting Regulations 2010 (EPR 2010). The IED recast the Directive on Integrated Pollution Prevention and Control and introduced a revised schedule of industrial activities falling within the scope of its permitting requirements. The schedule of waste management activities includes the recovery of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving biological treatment, but excludes activities covered by the UWWTD.

33. The IED seeks to achieve a high level of protection for the environment, taken as a whole, from the harmful effects of industrial activities. It does so by requiring each of the regulated industrial installations to be operated under a permit with conditions based around the use of BAT.

34. In July 2014, we deferred the need for the Water and Sewerage Companies (WaSCs), including the Appellant, to submit permit applications for their existing facilities to allow for further consideration of whether they were already covered under the UWWTD. All UK environmental regulators subsequently concluded this was not the case, and therefore that WaSC facilities fall within the scope of the IED.

35. On 2 April 2019, we confirmed to the WaSCs operating in England that their sewage sludge AD facilities needed to comply with the requirements of the IED.

36. The EPR 2010 set a deadline of 7 July 2015 for newly listed installations such as those for biological treatment of waste for recovery, to obtain an environmental permit. Therefore, the implementation of this aspect of the IED had already been delayed by nearly four years at the point of our confirmation of this requirement to the WaSCs on 2 April 2019.

37. The Agency subsequently sought to ensure all sewage sludge AD facilities obtained and operated under an environmental permit in as short a timescale as could reasonably be achieved. We asked the WaSCs to provide a definitive list of all facilities used to carry out biological treatment of sewage sludge. A submission schedule was provided to the WaSCs, allowing applications for these facilities to be submitted to us in 3-month tranches between 1 April 2021 and 1 July 2022. The application for the permit for the Site was listed to be submitted in Tranche 2 of this programme of work (by 1 July 2022).

38. Following discussion with the Appellant and due to the submission of insufficient information, the initial application was withdrawn on 9 May 2022 and resubmitted on the 11 July 2022.

39. The resubmission included:
    - A BAT assessment identifying that the existing Site did not currently meet BAT 19.
    - A completed ADBA (Anaerobic Digestion & Bioresources Association) tool which calculates the risk of pollution of the waste being stored on Site and provides the level of containment required. This is based on a source, pathway receptor assessment which identified the source risk level as 'high', the pathway risk as 'medium', and the receptors risk level as 'high' with an overall site hazard rating of medium based on the likelihood of occurrence, and a 'Class 2' secondary containment requirement.
    - 'Reading STC – Containment Options Report, dated July 2022' ("the Containment Options Report") – This confirmed the Appellant's containment classification assessment of an overall site risk of 'medium', and a 'Class 2' secondary containment requirement.
    - An odour management plan.

40. The overall risk of 'medium' identified by the Appellant in the Containment Options Report is based on an assessment of the consequence and the likelihood (or probability of occurrence) of that consequence from the risk of pollution of materials stored on Site. The consequence can be further defined in terms of the extent of harm and the severity of harm on receptors and the surrounding environment. The aim of the containment system implementation is to break the pathway between a source such as one of the AD tanks on Site and a receptor, such as a river.

41. The three classes of containment specified in CIRIA C736 are defined by increasing requirements in terms of design and construction integrity. Class 1 containment systems are provided where the risk of pollution arising from the storage of the inventory is relatively low, whereas class 3 containment systems are provided where this risk is relatively high.

42. At the time of issuing the Permit, over four years had passed since the Appellant had been advised that the existing operations on Site would need to meet BAT which includes BAT Conclusion 19 of the BREF for Waste Treatment which states: "In order to optimise water consumption, to reduce the volume of wastewater generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques…", as listed in the BAT Conclusion.

The appropriate techniques for the prevention, or where that is not practicable, the reduction of emissions to soil and water from primary risks identified as tank failure, leakage, and the transfer and handling of wastes and raw materials are listed in an extract set out in Table 1 below.

Table 1: BAT Conclusion 19 relevant techniques

Technique		Description	Applicability
c	Impermeable surface	Depending on the risks posed by the waste in terms of soil and/or water contamination, the surface of the whole waste treatment area (e.g. waste reception, handling, storage, treatment and dispatch areas) is made impermeable to the liquids concerned.	Generally applicable.
d	Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels	Depending on the risks posed by the liquids contained in tanks and vessels in terms of soil and/or water contamination, this includes techniques such as: • overflow detectors; • overflow pipes that are directed to a contained drainage system (i.e. the relevant secondary containment or other vessel); • tanks for liquids that are located in a suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment; • isolation of tanks, vessels and secondary containment (e.g. closing of valves);	Generally applicable.
h	Design and maintenance provisions to allow detection and repair of leaks	Regular monitoring for potential leakages is risk-based, and, when necessary, equipment is repaired. The use of underground components is minimised. When underground components are used and depending on the risks posed by the waste contained in those components in terms of soil and/or water contamination, secondary containment of underground components is put in place.	The use of above-ground components is generally applicable to new plants. It may be limited however by the risk of freezing. The installation of secondary containment may be limited in the case of existing plants.

43. The technical determination of this application identified key issues where the Appellant had not provided detailed and evidence-based proposals for secondary containment to show how they would meet the relevant BAT conclusion requirements. This is a standard requirement for a permit application operating an AD installation.

44. The Appellant instead provided a final high-level secondary containment proposal through the document 'Reading STC – Containment Options Report, dated May 2023'[11]. It was our understanding that this proposal would be taken forward to detailed design through the implementation of improvement condition IC9. This means that we were not able to fully assess the Appellant's proposals to meet the BAT conclusion requirements at application stage. However, the Appellant did provide:
    - A written commitment to implement BAT; and
    - An outline proposal that could achieve BAT 19 which the Appellant could take forward. This allowed the Agency to set time sensitive improvement conditions alongside backstop bespoke permit conditions.

45. We identified that ICs alone would not contain sufficient legal certainty to require an operator to have BAT in place. However, we acknowledged that this application was for an existing activity which had been operating for several years and we recognised that a pragmatic approach was needed to bring this unpermitted installation activity into IED environmental regulation.

46. This unique approach for the WaSC permits was implemented, in this case, by setting a prescriptive bespoke condition in the Permit for the outstanding secondary containment BAT issue. These bespoke conditions which have not been appealed (3.2.3 and 3.2.5) include a definitive requirement and deadline for *"all liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container have been agreed in writing with the Environment Agency."* With the conditions applying "*unless the operator strictly complies in full with IC9".* Within IC9 we also required the timely submissions of detailed plans. Should an operator not comply with an improvement condition, a permit condition will be in place for the Agency to enforce against.

47. Following determination, the Appellant was issued with a draft permit for operator review on the 19 June 2023. The Appellant responded to this on the 3 July 2023 with an e-mail[12], and excel file containing comments[13]. No comment was highlighted in relation to condition 2.4.1, no extension was requested for either the IC9 or IC13 compliance dates. The Appellant requested that *"comments should be read in conjunction with the Thames Water letter titled*

[11] Appendix 6 - Reading STC – Containment Options Report, dated May 2023.
[12] Appendix 7 – Appellant operators review for Reading.
[13] Appendix 8 – Reading Draft Permit comments 3 July 2023

"Industrial Emissions Directive" sent to Georgina Collins at the Environment Agency on 29th June 2023"[14].

48. The letter referenced above was submitted in response to the letter sent by the Agency[15] to all the WaSCs (which included the Appellant) which are required to operate as IED installations. This letter reiterated the requirements the Agency needed to enable us to determine the permit applications. These requirements were:

    - *Provide detailed proposals of how you intend to bring each facility up to the standard required by the IED and the BAT Reference document. Please ensure your current applications contain this information in full; if not you should provide the additional information as soon as possible.*
    - *Commit to achieving full compliance with the BAT standards as soon as possible and no later than 31 December 2024.*
    - *Commit the resources and carry out any necessary works within this timescale, if necessary in advance of the issue of the permit.*

49. The response received by the Agency in the letter referenced above on 29 June 2023 therefore provided a high-level response with the commitments and intentions from the Appellant for all the relevant installation permit applications. The letter received was not a site-specific response for the Site. In summary, this letter made the following points:

    - The Appellant supports the objectives of the IED but could not commit to implementing the requirements of BAT as expressed in our technical guidance.
    - The Appellant contends that the technical guidance goes beyond the specific BAT conclusions.
    - The Appellant's understanding of the need to obtain an environmental permit based on the instructions from July 2019.
    - The need to performing an analysis of the requirements at each site to understand the programmes of work needed to support the permit applications (across all the Appellant's sites). These steps included monitoring of effluents (liquor), bioaerosol monitoring, waste acceptance procedures, odour emissions assessment and residual biogas potential testing.
    - Cost estimates based on implementation of the requirements in the technical guidance.

50. This broad and high level response to the Agency did not specify Site specific issues but contained cost estimates which were not supported by detailed evidence. Furthermore, no issues were identified in relation to the substantive aspect of this appeal, namely the provision of designing and installing effective secondary containment for bulk storage tanks. While it points to some wider issues, its content does not provide detailed feedback on the requirements of IC9 on submitting detailed plans to support their proposals on secondary

[14] Appendix 9 – IED letter sent to Georgina Collins at the Agency on 29 June 2023
[15] Appendix 10 – Letter dated 7th June 2023 sent by the Agency

containment, or IC13 in relation to the demonstration of the effectives of odour control units.

51. We advised the Appellant of the requirements of containment assessments on multiple occasions prior to the application submission and during determination, including:

    - At a workshop held by Water UK in February 2020 (Water UK members are UK water and wastewater service suppliers for England, Scotland, Wales and Northern Ireland, the operator is a member of Water UK) – Presentation Title: Permitting Overview – Including section on containment – Surfacing, bunding and capacity, presented by a Senior Permitting Officer of the Environment Agency National Permitting Service.

    - Written advice sent in March 2021[16] by the Agency including.
        - Sector specific pre-application advice note.
        - BAT gap analysis template tool.

    - Presentation on 14 July 2021, delivered to Water UK, titled, *IED Permitting TaF + Spill Modelling*, which the operator attended, in which spill modelling was specifically discussed, along with a reiteration of application requirements. Spill modelling seminar presented by a Member of the Project Steering Group of CIRIA C736.

52. There are also various additional references to containment in guidance that is widely disseminated in the industry including:
    - Waste Treatment BAT Conclusions.
    - Environmental permitting guidance on the control of emissions (gov.uk).
    - *How to comply with your environmental permit. Additional guidance for: Anaerobic Digestion* Reference LIT 8737 Report version 1.0 dated November 2013.
    - Appropriate measures for the biological treatment of waste – consultation document and response comments [17].
    - Biological waste treatment: appropriate measures for permitted facilities - Guidance - GOV.UK (www.gov.uk)
    - Emissions control - Non-hazardous and inert waste: appropriate measures for permitted facilities[18] - This is not directly applicable to biological treatment but will be replicated in the appropriate measures as mentioned in the above bullet point.
    - SR2021 No 10: anaerobic digestion of non-hazardous sludge at a waste water treatment works, including the use of the resultant biogas[19]. This specifically applies to sludge AD facilities.

53. The Appellant identified documents and meetings as part of this appeal including:
    - A presentation given to the Agency by the Appellant on 8 August 2023.

[16] Appendix 11 - Written pre-application advice sent in March 2021 by the Agency.
[17] Consultation outcome - Appropriate measures for the biological treatment of waste
[18] Non-hazardous and inert waste: appropriate measures for permitted facilities
[19] SR2021 No 10: anaerobic digestion of non-hazardous sludge at a waste water treatment works, including the use of the resultant biogas

- An e-mail response from the Agency to the Appellant on the 11 August 2023.
- Meeting held on the 13 December 2023 between the Agency, the Appellant, DEFRA and OFWAT.
- Meeting on the 3 January 2024 between the Appellant and the Agency's Area Enforcement Officer.
- A letter sent by the Appellant dated 17 January 2024.
- A meeting that had not yet occurred on the 25 January 2024.

It should be noted that these all occurred following the granting of the Permit on the 27 July 2023 and could not be considered at the time of the application determination.

54. As part of the determination the Appellant provided us with high level solutions that met BAT and followed the principles of CIRIA C736 on which we based IC9. The Appellant clearly identified as part of their application that the risk posed by the loss of containment would be prevented by the implementation of a secondary containment solution that met the requirements of BAT and CIRIA C736, which allowed us to issue the permit with IC9.

55. The Appellant did not propose other methods to meet BAT 19 or CIRIA C736 that would provide at least an equivalent level of environmental protection as part of the application process, or in the four years previously. The Appellant did not raise any concerns around the use of CIRIA C736 as part of the application determination.

56. We wrote to the Appellant on the 11 August 2023[20] (after the granting of the Permit) following a meeting with the Appellant on the 8 August 2023 in relation to another application that was in determination for the Maple Lodge site on behalf of the Appellant. In this e-mail we made clear our process and requirements should the Appellant want to propose an alternative approach that would provide the same level of environmental protection as BAT 19 and CIRIA C736. This confirmed that any alternative approach would need to be provided as part of the determination of an application, and "not through an IC".

57. Article 11(a) of IED requires that *"all the appropriate preventative measures are taken against pollution".* Article 11(c) of IED requires that *"no significant pollution is caused" and Article 11(b)* requires that *"the best available techniques are used".* We do not consider it appropriate to use improvement conditions to address issues identified which are fundamental principles of environmental protection, or to determine how the Appellant would meet BAT. If the Appellant had proposed the discussion of alternative measures that would provide the same level of environmental protection as BAT, this would have needed to be provided for consideration as part of the determination process. Should these measures have been determined not to provide an equivalent level of environmental protection as provided by use of BAT we would have had to refuse the application. A refusal could have been made on the grounds that the Appellant would not have satisfactorily demonstrated that they would be using BAT to prevent, or where that is not practicable, reduce emissions to soil and water in relation to:
    - The provision of impermeable surfaces.

[20] Appendix 9 – Email 11 August 2024

- The provision of techniques to reduce likelihood and impact of overflows and failures from tanks and vessels.
- The design and maintenance provisions to allow detection and repair of leaks.

58. It should be noted that the approach outlined in paragraph 57 above has already been applied to other WaSC sites leading to the refusal of four applications.

Setting dates under IC9 and IC13

59. Based on the high-level commitment provided by the Appellant, the significant time that had already passed since the 2 April 2019 confirmation to the WaSCs that their AD installations fell under the control of the IED and the information provided as part of the application, we set the following IC dates.
    - IC9 – From 6 months of Permit issue or such other date as agreed in writing with the Agency for the detailed secondary containment plan. This is followed by the Implementation of all required and approved containment improvements by 31/12/2024. (Note: This is over five and a half years after the Appellant was initially informed of the requirements to meet BAT and provided one year and five months to complete the requirements identified by the Appellant).
    - IC13 – Within 6 months of permit issue or such other date as agreed in writing with the Agency for the review of the effectiveness of odour abatement plant.

60. The Appellant did not make any comment on the above timescales as part of the Permit determination process or operator review.

61. It should be noted that the implementation date for operators to be compliant with the Waste Treatment BAT conclusions was 17 August 2022. We believe that the deadlines specified in IC9 and IC13 provided sufficient time in which the Appellant could produce detailed plans to meet BAT and implement the proposed solutions for the development of the high-level containment solutions proposed, and to demonstrate the effectiveness of the installed OCUs. For IC9, should the Appellant not satisfy the requirements of the improvement condition by 31 December 2024, the Agency may commence enforcement action. Failure of the Appellant to achieve BAT, or failure to take steps to implement BAT by the implementation date is at the Appellant's risk.

Section 5: The Determination

62. The Agency received the Permit application on 11 July 2022. Following the receipt of additional information from the Appellant, the Agency duly made the application on 30 January 2023.

63. The initial application contained sufficient information to begin an assessment. In relation to secondary containment the Appellant provided:

- ADBA Containment Classification Assessment, received 11 July 2022[21].
- J840 – STC IED Containment Options report, dated July 2022.

In relation to odour control the Appellant provided:

- Odour Risk Assessment, received 11 July 2022.
- AM-OMP Reading STW Odour management plan, dated July 2022.

64. The 'Containment classification assessment' provided by the Appellant was undertaken using the ADBA tool and guidance for assisting operators of AD plant to determine the level of secondary containment required in relation to environmental risk. The ADBA tool and guidance was developed as a guide for secondary containment for AD. The guide states "Both the guide and the classification tool draw upon the principles and methodologies within CIRIA C736. The principles within CIRIA C736 are generally accepted as good practice in the design and construction of containment systems. The principles of CIRIA C736 are distilled into this accessible guide, which attempts to draw out the parts relevant to the AD sector." The tool itself is clearly set out to provide an inventory of sources, pathways and receptors and aligns with the containment system class types in CIRIA C736. It provides risk ratings and allows mitigation measures to be considered.

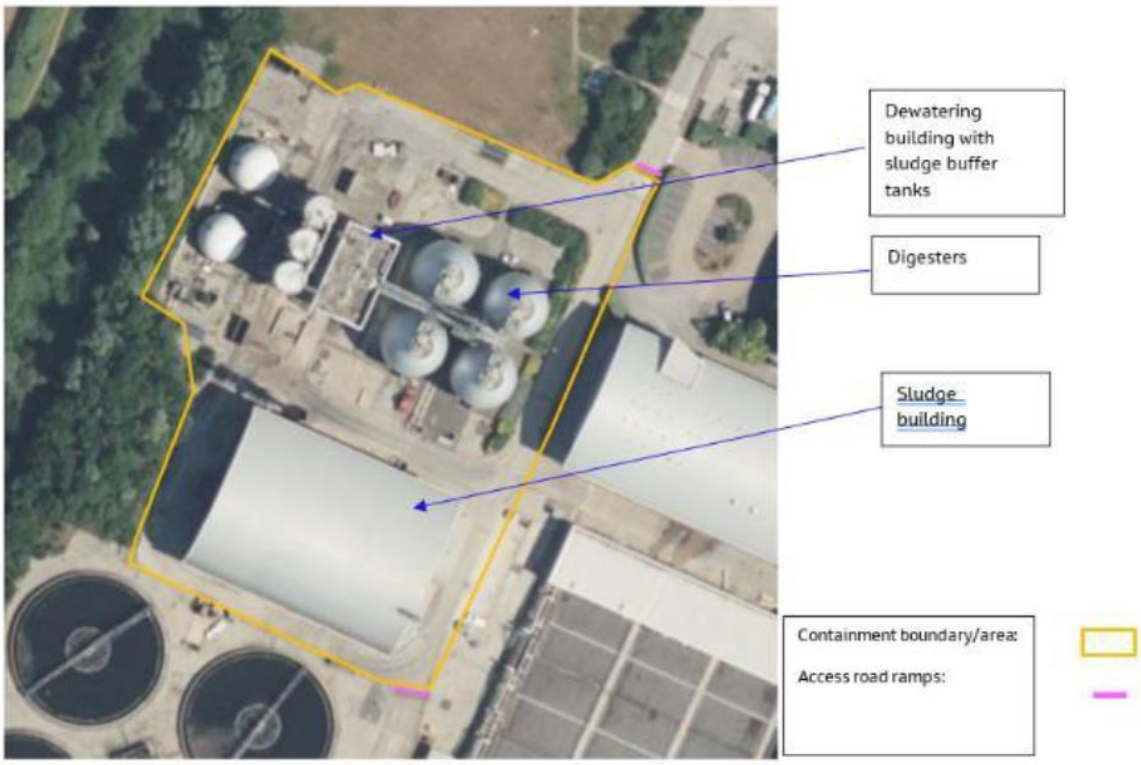
65. On review of the ADBA assessment the Appellant had identified a 'medium' risk site and the need for a 'Class 2' containment type which we agreed with as part of the determination. We agreed with this assessment due to the nature of sewage sludge, waste cake or waste liquors being stored and transferred at this Site being both a short and long-term hazard to the environment if released, and given the location of this Site that deals with these materials, it was reasonable to conclude that any major tank failure at the Site would have the potential to cause significant damage to sensitive receptors. The Appellant's ADBA assessment confirmed this by allocating a 'high' risk rating for the source material being stored.

66. The Appellant also provided the document, 'STC IED Containment Options report'. On assessment of this report, we considered that it contained some errors and required clarification of certain points which were responded to as a result of a formal request for information (a Schedule 5 notice) dated 2 March 2023. A final updated report was submitted on the 30 May 2023 dated May 2023 following a response to further clarifications. This report included.
    - A description which stated the Site could hold up to 11,660m^3 of liquid sludge in 14 tanks at any one time.
    - Confirmation that the Appellant had assessed the site as needing 'Class 2' containment. It stated, *"Whilst the site is identified as requiring Class 2 containment (impermeable soil with a liner), the proposed solution is intending to concrete (with no liner) on the basis of the impermeability of the concrete, inherent strength and long-term mechanical resistance containment solution*". This approach would satisfy the basic requirements of BAT 19c which requires that impermeable surfacing is

[21] Appendix 12 - ADBA Containment Classification Assessment received 11 July 2022

implemented as a technique to prevent or, where that is not practicable, to reduce emissions to soil and water.

- A description which outlined that, should a secondary containment solution not be implemented, then a catastrophic tank failure would not be contained within the Site. The Appellant stated, *"sludge content will initially spread within the sludge and digester area including the Dewatering and Sludge Buildings and the Power building containing the Combined Heat and Power engines. It is expected that the flow will further travel north bound and overfill the site's car park space with some sludge partially spilling over to adjacent grassland next to RE3 Waste Management Site, northwest of the site boundary. Most of the sludge will then spread to the road entering the site and will eventually spill onto Island Road, north of the site boundary which could potentially prevent access to the nearby Amazon and DHL warehouses. The spill will also travel south of the digesters within the STW".* The Agency also noted that as well as the above, a catastrophic failure would flow into the adjacent stream, ditch, and surface water drains which connect to the River Kennet and Foundry brook.
- A proposal for an outline secondary containment design based on 25% of the total tank volume plus rainfall as outlined in CIRIA C736. This identified the need to contain a volume of 2,915m^3 of the total tank volume. This solution included a preferred containment option, identified as *"option 1 – wide containment approach as outlined in section 4.1.1, to construct a 350m long bund wall (500 - 1000mm high) around the wide containment area. Containment ramps will be constructed across the road crossings. Tertiary containment to be provide by the existing site wide boundary bund and installation of a 250mm high ramp across the main site access road 12m length. In addition to the containment elements, isolation of the site drainage system linked to the containment area will be required to mitigate the risk of unmanaged flows impacting the sewage treatment works. Existing gravelled and grass areas within the containment will be replaced with concrete. Elements of the site roads will be replaced/repaired to allow them to present an impermeable surface."* This approach would satisfy the basic requirements of BAT 19d which requires, "techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels" and "tanks for liquids that are located in a suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment".
- The report also identified the WwTW as a potential receptor stating that *"In addition to the containment elements, isolation of the site drainage system linked to the containment area will be required to mitigate the risk of unmanaged flows impacting the sewage treatment works."*



Source: 'STC IED Containment Options report', dated May 2023 'Figure 4.1 – Containment Option 1 – Wide area containment option.

67. Based on the above information provided by the Appellant we considered that this provided us with sufficient information to demonstrate that the Appellant would meet the requirements of BAT 19, and as such we imposed IC9 to require the Appellant to finalise detailed solutions for the preferred containment option 'Option 1' identified above.

68. The Agency recognised that the Appellant's proposals for secondary containment measures at the Site were not complete and would require final detailed designs to be completed. As such we imposed IC9 providing the Appellant with 6 months to complete this design work, and a further 11 months to implement the detailed design (17 months in total).

69. Instead of issuing the Permit with improvement conditions, the Agency could have pursued an alternate approach. This would have involved the return of the application as not having been duly made or refusal of the duly made application. However, we recognised that this industrial activity was already existing and being undertaken. Therefore, we considered it appropriate to bring these activities into environmental regulation as an installation, adopting a reasonable and pragmatic approach. While we acknowledge that the current operations present a pollution risk, the Appellant is not introducing new risks to the environment. The improvement condition therefore allows the Appellant an opportunity to implement the solutions proposed to comply with BAT after the Permit has been issued. It is important to note that any applications for new plant and bulk tanks would require a demonstration that secondary containment is designed in line with CIRIA C736 (or possible equivalent alternative) before a permit could be issued.

70. While detailed secondary containment infrastructure design was not supplied, the proposals submitted by the Appellant described what they planned to implement, and followed the primary requirements for bund design (as outlined in our guidance *Control and monitor emissions for your environmental permit*).

71. The Appellant also confirmed that the secondary containment measures would be designed in compliance with CIRIA C736 by a qualified structural engineer.

72. As such the Agency had no reason to believe that the proposals that the Appellant submitted could or would not be achieved.

73. As advised above, the initial application contained sufficient information to begin an assessment. In relation to Odour control the application provided.
    - Odour Risk assessment, received 11 July 2022.
    - AM-OMP Reading STW Odour management plan (OMP), dated July 2022

74. Following some further clarification the final OMP, dated March 2023[22], was agreed and added to the operating techniques of the Permit.

75. The OMP included the operation of a two-stage odour control unit (OCU) at emission point A15. The abatement plant specified, included a wet scrubber and a standby carbon filter. BAT conclusions 34 and 53 explain that, for 'Wet scrubbing' abatement techniques, water, acid or alkaline scrubbers are used in combination with a biofilter, thermal oxidation or adsorption on activated carbon. The solution identified by the Appellant was sodium hydroxide and sodium hypochlorite which are alkaline and therefore this stage 1 wet scrubbing process should be used in conjunction with a biofilter, thermal oxidation or adsorption on activated carbon. As such, wet scrubbing alone does not demonstrate BAT. Compliance with IC13 would provide information to check the effectiveness of the abatement system and provide "recommendations for improvement including the replacement or upgrading of the abatement plant" as may be considered necessary.

76. As advised previously these are existing operations that are being brought into regulation following a decision by UK regulators. While the current operations present a pollution risk, the Appellant is not introducing new risks to the environment. It is important to note that any applications including new plant would require confirmation that they will meet BAT before a permit could be issued.

77. It should be noted that the Appellant was notified on the 2 April 2019 that their sewage sludge AD facilities needed to comply with the requirements of the IED, which includes BAT conclusion 34. This states, "In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H_2S and NH_3, BAT is to use one or a combination of the techniques given below." These techniques are identified as the

[22] Appendix 13 – OMP dated March 2023

implementation of odour control techniques such as adsorption, biofilters, thermal oxidation or wet scrubbing. BAT conclusion 53 states that "In order to reduce emissions of HCl, NH_3 and organic compounds to air, BAT is to apply BAT 14d (containment, collection and treatment of diffuse emissions) and to use one or a combination of the techniques" identified as adsorption, biofilter, thermal oxidation or wet scrubbing. As such the Appellant has already had over 4 years to implement solutions prior to the issue of the improvement condition IC13. As stated previously the Appellant provided no comment in relation to IC13 implementation dates as part of the operator review process, and we had no reason to believe that the Appellant would not be able to comply with the dates issued.

Section 6: The use of 'credible scenarios' and communication and meetings following permit issue.

Use of Credible Scenarios

78. Section 4.3.2 of CIRIA C736 provides that "in determining containment requirements, the volume of substance should be based on the loss from a 'credible scenario' and this need not necessarily involve the entire site inventory. This should also be discussed and agreed with regulators at an early stage in the design process." The term credible refers to a 'foreseeable (credible) release event'. This includes for example all modes of escape of pollutants from the primary storage vessel, modes of failure of the bund, incident scenarios, loadings and chemical and physical exposure (particularly fire).

79. BAT 19 requires that in order to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques which includes the use of impermeable surfacing and suitable secondary containment. CIRIA C736 requires that "*Where two or more tanks are installed within the same bund, the recommended capacity of the bund is the greater of:*

    - *110 per cent of the capacity of the largest tank within the bund*
    - *25 per cent of the total capacity of all the tanks within the bund, except where tanks are hydraulically linked in which case they should be treated as if they were a single tank"*

    Any deviation from this would be classed as an 'alternative approach' to BAT in which the Appellant would need to demonstrate with detailed evidence in the determination of the application (not through an IC) that the 'alternative approach' proposed would provide the same level of environmental protection as the relevant BAT technique which is the use of impermeable surfacing and suitable secondary containment.

Communication and meetings following permit issue

80. The Appellant sought an extension to IC9 on 3 January 2024 at a meeting with the Agency which was followed up in writing on 17 January 2024[23] by the Appellant. The email included

[23] Appendix 1 - Email - Thames Water IED Permit - Improvement Conditions for Reading IED Permit EPR/MP338LU/V004

a letter from the Appellant[24], and Appendix A – Reading STW – IED Containment review[25]. On 23 January 2024 the Agency wrote to the Appellant by e-mail[26] to advise that the IC9 deadline would not be extended and confirmed that a Compliance Assessment Report ("CAR") would be issued shortly confirming this.

81. The CAR form sent on 8 February 2024[27] included the Agency's decision to reject the extension request and the reasons for this decision. The CAR form outlined that the written containment plan had not been submitted by the Appellant as agreed, and confirmed that an extension request of five months was not agreed. The reasons stated were that the Appellant was now looking at a "credible scenario" approach and not the previously submitted 25% secondary containment which was provided as part of the determination process. The Agency identified that this was a significant change to the information submitted as part of the Permit application, stating that "We (The Agency) provided advice to the industry regarding secondary containment including at a workshop held by Water UK in February 2020, written advice in March 2021 and a presentation in July 2021 delivered to Water UK. TWUL has had years to plan and prepare for the requirements of this improvement condition. As such an extension is not agreed. As set out in the information supplied to TWUL by Clive Humphreys on the 17 January 2024, we do not accept that the concept of credible scenarios offers an opportunity to reduce secondary containment capacity. However, we are open to proposals that may deviate without compromising the level of environmental protection."

82. On the 8 August 2023 (approximately 1 month after the grant of the Permit) the Agency attended a meeting to discuss Maple Lodge's permit application in relation to spill modelling, the containment assessment, and the Schedule 5 questions raised as part of the Maple Lodge determination. At this meeting the Appellant provided a presentation in which they raised the use of 'credible scenarios' in the development of secondary containment solutions.

83. In response to this the Agency wrote to the Appellant by e-mail on the 11 August 2023[28] to clarify the Agency's position on 'credible scenario' use in secondary containment proposals. Within this e-mail we stated that "BAT is clear that you must provide secondary containment which we would expect to include impermeable surfacing and application of the 110% or 25% rule in line with CIRIA C736. Any deviation to this would be classed as an 'alternative approach' to BAT which you would need to demonstrate with detailed evidence in the determination of your application (not through an IC) that the 'alternative approach' proposed would provide the same level of environmental protection as the relevant BAT technique".

84. Following this e-mail we did not receive a response from the Appellant and therefore we considered the question to have been addressed and closed as the Appellant did not raise any further queries in response to this e-mail.

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[24] Appendix 2 – Appellant letter dated 17 January 2024
[25] Appendix 3 - Appendix A – Reading STW – IED Containment review
[26] Appendix 4 – Email to the Appellant confirming that IC9 and IC13 had not been extended.
[27] Appendix 5 - CAR form sent on 8 February 2024
[28] Appendix 14 – E-mail to the Appellant on the 11 August 2024

85. This issue was further raised by the Appellant at a meeting on the 13 December 2023 (approximately 5 months after the grant of the Permit) between the Appellant, Defra, Ofwat and the Agency. The Appellant again raised the question of how 'credible scenarios' should be interpreted, which the Appellant followed up with an e-mail received on the 14 December 2023[29]. This e-mail set out the Appellant's interpretation of how they believed use of 'credible scenarios' in the implementation of secondary containment solutions should be applied.

86. The Appellant argued that the established industry standard for secondary containment volume; the larger of 110% of the largest tank or 25% of the total tankage volume in the bunded area, does not apply to them and sought to use the 'credible scenarios' provision in CIRIA C736 to justify this. We disagree with their interpretation as no evidence based proposals were submitted by the Appellant to support a reduction in industry standard requirements for secondary containment volumes. It should be highlighted that the use of 25% rule in regards to the 110% and 25% rule contained within CIRIA C736 is already a compromise on what a strict interpretation of BAT would require. BAT requires "tanks for liquids that are located in a suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment". This would include all hydraulically linked tanks, with the 25% element of the rule already providing a concession to operators who might otherwise be faced with the prospect of providing containment equivalent to 100% of the total capacity of the tanks within a bunded area.

87. On the 17 January 2024[30], following legal advice on the Appellant's interpretation of the use of 'credible scenarios', the Agency responded to the Appellant outlining that we rejected their interpretation that allowed credible scenarios to be used to reduce secondary containment volumes. This response included clarification on our view of the CIRIA C736 use of 'credible scenarios'. We explained:

    - Section 4.2.1 of CIRIA C736 explains the assumptions behind the 110% and 25% rule.
    - This includes that for the 25% rule the assumption is that not all the tanks within the secondary containment design are expected to fail at the same time. However, there could be credible scenarios where this assumption might not hold, such as an explosion damaging multiple tanks, implying that for some credible scenarios you may conclude that containment needs to be increased above the standard 25%.
    - CIRIA C736 guidance does not anticipate an equivalent argument whereby the containment volume could be reduced. It is entirely credible to foresee a situation where human error results to the loss of the entire contents of a tank (there have been examples of this) and virtually impossible to eliminate that risk so the standard 110% and 25% rules are applied as a minimum.
    - Figure 4.3 of CIRIA C736 reinforces this point. It shows credible scenarios to be relevant only if the contents of a tank are combustible, presumably because the loss of more than one tank is unlikely unless there is a fire or explosion. The implication is

[29] Appendix 15 - E-mail received on the 14 December 2023 from the Appellant
[30] Appendix 16 – E-mail response from the Agency to the Appellant dated 17 January 2024

that credible scenarios can result in the required containment volume being increased but not decreased.

88. On 5 February 2024[31] the Appellant responded to us and to Defra indicating that they disagreed with our interpretation of credible scenarios in CIRIA C736. The basis for the Appellant's argument had already been addressed in previous correspondence so we did not respond further.

89. On the 1 March 2024 we received a letter from the Appellant[32] which stated that "Given we have not yet secured the funding, and practically it will take years to deliver all the investment, we currently have no option but to appeal all permits and potentially consider legal challenges." Unless the applicability criteria say otherwise, BAT is usually considered to be affordable across the industry sector as a whole for both newly built plant and a "typical" existing plant. Performing a cost benefit analysis is only relevant in cases which qualify for a derogation from BAT and cost alone would not be considered sufficient or appropriate as a reason for a derogation/deviation from BAT. The formal derogation process only applies to associated emission levels which are not applicable to narrative BAT requirements including secondary containment.

90. The Agency has subsequently sought further clarification and expert advice on our interpretation. This has included discussions with one of the authors of CIRIA C736 who has confirmed that the use of 'credible scenarios' is included to cover situations where more than one tank could be compromised, and as such more than the 110% and 25% of the standard volume may be required. For clarity this may typically occur where there is a risk of explosion or fire compromising more than one tank within the bunded area. This is a possible and credible scenario at the Site, where biogas is generated by the AD process. Due to the methane component, biogas is combustible. In addition, fugitive emissions of biogas could also risk fire or explosion, as well as toxicity from gases such as hydrogen sulphide. Therefore, at an AD site, it is unlikely that the Agency would accept the use of 'credible scenarios' to reduce volumes to less than the standard 110% and 25%, unless significant justification with detailed evidence could demonstrate why smaller volumes provided an equivalent level of environmental protection.

Section 7: Comments on grounds of appeal

91. The Agency has set out below the Appellant's reasons for the appeal as outlined in their appeal statement to address the Appellant's concern about their ability to comply with IC9 and IC13 of the Permit and provides a response on each.

Condition 2.4.1

92. The Agency fundamentally disagrees with the Appellant's reason for appealing permit condition 2.4.1 which states that *"The operator shall complete the improvements specified in schedule 1 table S3.1 by the date specified in that table unless otherwise agreed in writing by*

[31] Appendix 17 – Email from Appellant to the Agency dated 5 February 2024.
[32] Appendix 18 - Letter dated 1 March 2024 from the Appellant

the environment agency". Please see also our comments on this aspect of the appeal in paragraphs 2 and 23. The Agency believes that it has provided sufficient guidance, clarification, and time to implement IC9, and IC13 identified as part of the Permit determination. This is justified for the following reasons:

- The Appellant was notified on the 2 April 2019 that their sewage sludge AD facilities needed to comply with the requirements of the IED. This has provided them with over four years and 10 months since this date to implement solutions to meet BAT.
- It has been over six months since the grant of the Permit.
- The Appellant has failed to implement or progress the proposals and commitments that they made as part of the application determination in relation to IC9 and IC13. The Appellant instead chose to adopt an 'alternative approach' to BAT following determination of the application using 'credible scenario' arguments with insufficient evidence being provided to support the alternative approach or demonstrate that it would be able to provide an equivalent level of environmental protection as BAT.
- The Appellant did not provide an 'alternative approach' to BAT during permit determination, which would have been the appropriate approach to take for proper assessment of the proposed alternative.

The Risk Assessment Approach for Secondary Containment

93. The Appellant has advised that they believe the Agency still needs to agree the risk assessment approach for secondary containment, and that without an agreed risk assessment approach, the Appellant cannot determine the containment requirements and failure scenarios. They further state that without the above being agreed the final design cannot be confirmed and approved by the Agency. We fundamentally disagree with this argument for the following reasons.

94. BAT means the available techniques which are the best for preventing or, where that is not practical, reducing emissions and impacts on the environment as a whole. "Techniques" within the meaning of BAT include both the technology used and the way an installation is designed, built, maintained, operated and decommissioned.

95. BAT and how it should be applied is set out in the IED and applies specifically to the Schedule 1 'listed' activities and Directly Associated Activities ("DAAs") which the Environment Agency sets out in the 'activities table' within installation permits.

96. The European Commission produces best available technique reference documents, (referred to as "BREFs"), including ones for different 'listed' activities. These BREFs are summarised into BAT Conclusions ("BATc") for installations. BREFs are the main reference documents used by competent authorities in Member States when issuing operational permits for installations, ensuring similar techniques and standards are applied to similar activities across Europe. Some BATc are generic in application and others apply to specific activities.

97. In this instance the relevant BAT techniques are referenced in the Waste Treatment BAT conclusions 2018 as detailed above. This includes BAT 19 which requires that in order to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques which include:

    - Impermeable surfaces.
    - Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels which include:
        - the use of impermeable surfacing and suitable secondary containment.
        - overflow detectors;
        - overflow pipes that are directed to a contained drainage system (i.e. the relevant secondary containment or another vessel);
        - tanks for liquids that are located in suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment;
        - isolation of tanks, vessels and secondary containment (e.g. closing of valves).

98. Our publicly available guidance 'Control and monitor emissions for your environmental permit' requires that "Your bunds must also have a capacity larger than both of the following:
    - 110% of the largest tank the bund is protecting
    - 25% of the combined volume of all the tanks the bund is protecting"

99. CIRIA C736, published in 2014 requires that "*Where two or more tanks are installed within the same bund, the recommended capacity of the bund is the greater of:*

    - *110 per cent of the capacity of the largest tank within the bund*
    - *25 per cent of the total capacity of all the tanks within the bund, except where tanks are hydraulically linked in which case they should be treated as if they were a single tank"*

100. As outlined in paragraphs 51, 52 and 53 above, we provided the Appellant with opportunities to discuss any concerns throughout the permitting process, and we have multiple locations where guidance on secondary containment can be found.

101. Any deviation from these standards is classed as an 'alternative approach' to BAT in which the Appellant would need to demonstrate and justify with detailed evidence in the determination of the application (not through an IC) that the 'alternative approach' proposed would provide the same level of environmental protection at the relevant BAT technique. The Appellant did not provide any 'alternative approach' or raise any issues during determination of the application that they could not meet these standards. To the contrary, they committed to meeting these standards and provided a preferred option to take forward to detailed designs.

102. In addition, we note that the Appellant has stated that the Agency needs to produce an agreed risk assessment methodology for secondary containment. It is not the regulator's responsibility to perform an environmental risk assessment for a prospective operator. The

Appellant is responsible for the risk and the potential impacts from that activity. Guidance, best practice, and other resources described within this document provides sufficient support for an operator to produce robust, detailed proposals for secondary containment. As a legal operator, the Appellant should have sufficient control over the activity and be capable of complying with the permit conditions. In short, there is an industry standard approach to risk assessment for secondary containment with which the Agency is comfortable. Our views on the (lack of) applicability and suitability of a 'credible scenarios' approach to secondary containment at the Site have been made clear to the Appellant and there is no other risk assessment methodology that has been proposed to the Agency for agreement/approval.

Continuing discussions

103. The Appellant has advised that continuing discussions at national and local Agency level on the general risk assessment approach to secondary containment are still ongoing. As referred to above, we believe that all discussions in relation to secondary containment have been concluded and we have communicated this to the Appellant. The Appellant did not raise the general risk assessment approach to secondary containment as part of the determination of the application, in response to the operator review of the draft Permit, while the application was on the work queue, or following notification on the 2 April 2019 by the Agency that their sewage sludge AD facilities needed to comply with the requirements of the IED.

104. Furthermore, without proposals based on Site specific evidence, there is no reason why general discussions on risk assessments for secondary containment separate to the determination of the application should be considered as relevant to this appeal.

The use of CIRIA C736 to risk assess the failure of tanks is not referenced within the Waste Treatment BAT conclusions.

105. CIRIA C736 is considered the industry containment assessment standard of choice and is based on the source-pathway-receptor approach to risk assessment. It provides a clear methodology for demonstrating BAT, appropriate measures and compliance with permit conditions. The guidance provides containment options and examples of good practice, but it is not prescriptive and there may be circumstances where it could be appropriate to use other methods where at least an equivalent level of environmental protection is provided.

106. As outlined above BAT is to use an appropriate combination of the techniques which include impermeable surfacing and techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels which includes providing tanks for liquids that are located in suitable secondary containment; the volume normally being sized to accommodate the loss of containment of the largest tank within the secondary containment.

107. The Appellant's existing operations do not meet BAT 19 requirements and as such improvements are required. The Appellant provided outline designs for these improvements in document, 'Reading STC – Containment Options Report, dated May 2023'. The Appellant did not propose other methods for secondary containment where at least an equivalent

level of environmental protection would be provided. The Appellant identified that the use of CIRIA C736 to risk assess the failure of tanks is not referenced within the Waste Treatment BAT conclusions querying its use when determining containment volume, however the 'credible scenario' premise proposed by the Appellant to reduce the containment volume required are based on principles taken from CIRIA C736. In short, CIRIA C376 is industry accepted guidance for demonstrating BAT, even though not referenced within the Waste Treatment BAT conclusions. Compliance with it is likely to amount to suitable demonstration of the implementation of BAT. It is not prescriptive or binding but alternative methods need to demonstrably provide at least equivalent levels of environmental protection. The Appellant has failed to provide evidence demonstrating that any alternative proposals provide such levels of protection.

Flammability of material

108. The Appellant has stated that the CIRIA C736 was produced following the Buncefield Oil storage facility incident in 2005, and that the material held within the sludge holding tanks applied for as part of the Permit are not flammable like oil.

109. AD is a biological treatment of waste which uses natural processes where microorganisms break down organic matter in the absence of oxygen into biogas and digestate. Feedstock of sewage sludge and separately collected waste materials may have wide-ranging physical and chemical characteristics which have varying biogas production potential. Biogas has a varied composition but typically contains predominantly methane, carbon dioxide and nitrogen with traces of hydrogen sulphide and ammonia. Due to the methane component, biogas is combustible and has a significant global warming potential. In addition, fugitive emissions of biogas could also risk fire or explosion, as well as toxicity from gases such as hydrogen sulphide.

110. CIRIA C736 states that "This guidance (CIRIA C736) has been developed to assist owners and operators of industrial and commercial facilities storing substances (inventories) that may be hazardous to the environment". Due to the nature of sewage sludge, cake or liquor stored in the tanks on site it is clear that this would be considered to be both a short and long-term hazard to the environment if released. The Appellant agreed with this as part of the application applying a 'high' environmental hazard rating to the wastes being stored on site.

111. In September 2019 the Agency carried out and published 'A Review of Environmental Incidents at Anaerobic Digestion (AD) Plants and Associated Sites between 2010 and 2018'[33]. This document stated that "According to a leading AD plant insurer, "Anaerobic digestion plants may experience significant loss events during operation resulting from damage to operational equipment, structural collapse, fire, flood or theft. These events can often result in lengthy periods of process downtime, with a consequential loss of revenue, clean-up costs, risk of local pollution and a resulting drop in local community confidence and support

[33] A Review of Environmental Incidents at Anaerobic Digestion (AD) Plants and Associated Sites between 2010 and 2018

for the project; which can be difficult to rebuild. It is essential that all plant operators, and those involved in its maintenance, fully understand the risks that are present on an AD plant, and why these safety and control features are provided. They need to be aware of the consequences of safety feature failures, incorrect plant operation and not following set procedures. Human error is often the root cause of many major loss or damage events." In short, we consider that CIRIA C736 is relevant and applicable to the Site because of both the potential flammability of the biogas produced in the AD process and the environmentally hazardous nature of the material used and treated in the Site processes.

The use of 'Credible Scenario'

112. The Appellant has queried the application by the Agency of the 110% and 25% rule to determine containment volume within CIRIA C736 stating that discussions on the use of a risk-based approach and the use of 'credible failure scenarios' have yet to be concluded, which they expect to be on the 25 January 2024.

113. As outlined above, we consider that the discussion on the use of 'credible scenarios' has been concluded and have clearly explained to the Appellant that we do not agree with the use of 'credible scenarios' to reduce containment volumes at the Site.

Changes to approach/guidance by the Agency.

114. The Appellant has stated that they consider there have been changes in the approach/guidance by the Agency throughout the determination of the application on the use and interpretation of CIRIA C736, which has delayed any potential response.

115. The Agency fundamentally disagrees with this statement, and this was not raised by the Appellant during the determination of the application. As outlined within this statement, requirements for secondary containment, expected design features and minimum volumes are basic risk management measures required for any industrial process where bulk storage of potentially polluting liquids are stored and the Agency has consistently maintained this approach to the determination of applications.

Section 8: Conclusion

116. The Appellant did not raise the use of 'credible scenarios' as part of the determination of the application and did not provide any alternative proposals to meet BAT 19 in relation to secondary containment or impermeable surfacing. We would have considered any proposals which deviate from the industry standard and assessed if the proposals provided an equivalent level of environmental protection had they been proposed and evidenced prior to the Permit being issued.

117. The Appellant provided proposals and solutions to meet BAT 19 which they have chosen not to progress to detailed design work in line with the agreed improvement condition. The

Agency has at no point agreed that these proposals should not be progressed to final detailed design.

118. ICs are not intended to be an opportunity for an operator to work out how they will meet BAT. Where an operator is not yet compliant with relevant BAT conclusions, we may accept an application where the operator describes how they will meet the required BAT conclusion within an acceptable timeframe from which we will set ICs.

119. As explained in the body of this Statement of Case, the Appellant has had sufficient time to be able to comply with IC9 and IC13.

120. Taking all of this into account, the Inspector is respectfully requested to dismiss this appeal.

Section 9: List of appendices/attachments

- Appendix 1 - Email - Thames Water IED Permit - Improvement Conditions for Reading IED Permit EPR/MP338LU/V004
- Appendix 2 – Appellant letter dated 17 January 2024
- Appendix 3 - Appendix A – Reading STW – IED Containment review
- Appendix 4 – Email to the Appellant confirming that IC9 and IC13 had not been extended.
- [1]Appendix 5 - CAR form sent on 8 February 2024Appendix 6 - Reading STC – Containment Options Report, dated May 2023
- Appendix 6 - Reading STC – Containment Options Report, dated May 2023.
- Appendix 7 – Appellant operators review for Reading.
- Appendix 8 – Reading Draft Permit comments 3 July 2023
- Appendix 9 – IED letter sent to Georgina Collins at the Agency on 29 June 2023
- Appendix 10 – Letter dated 7th June 2023 sent by the Agency.
- Appendix 11 - Written pre-application advice sent in March 2021[1] by the Agency.
- Appendix 12 - ADBA Containment Classification Assessment received 11 July 2022
- Appendix 13 – OMP dated March 2023
- Appendix 14 – E-mail to the Appellant on the 11 August 2024
- Appendix 15 - E-mail received on the 14 December 2023 from the Appellant
- Appendix 16 – E-mail response from the Agency to the Appellant dated 17 January 2024
- Appendix 17 – E-mail from Appellant to the Agency dated 5 February 2024
- Appendix 18 - Letter dated 1 March 2024 from the Appellant